Form C-104
Rev. 2/01

CONSTRUCTION VALUE ENGINEERING CONCEPT PROPOSAL
MISSOURI DEPARTMENT OF TRANSPORTATION

Date 06/05/2009

Contract ID 070928-X01 **Job No.** J0P0928

County Madison **Route** 67 **Original Bid Cost** $37,597,624.33

Contractor Emery Sapp & Sons **By** Matthew Oesch

Designed By Matthew Oesch **Phone** (573) 489-9216

VECP 09-48

1. **Description of existing requirements and proposed change(s). Advantages/Disadvantages**

   Route N is designed for realignment from the new four lane west to Sta 6+55.5. The current design would require the existing roadway be closed and demolished in order to construct the new alignment. Emery Sapp & Sons proposes to wedge the new alignment into the existing roadway with asphalt paving. Advantages to the proposal include preventing road closure of Route N, reducing the time frame of traffic disruption, expedite project, and increase cost savings. No disadvantages are foreseen with this proposal.

2. **Estimate of reduction in construction costs.** $3,092.95

3. **Prediction of any effects the proposed change(s) will have on other department costs, such as maintenance and operations.**

   None

4. **Anticipated date for submittal of detailed change(s) of items required by Section 104.6 of the Specifications.**

   06/05/2009
   (date)

5. **Deadline for issuing a change order to obtain maximum cost reduction, noting the effect of contract completion time or delivery schedule.**

   06/22/2009 (date) — Provide ample time to schedule materials and subcontractors (effect)

6. **Dates of any previous or concurrent submission of the same proposal.**

   N/A
   (date and/or dates)

Additional Comments:

A letter with detailed explanations of the construction modifications and spreadsheets detailing cost savings will be included.

***** Portion Below This Line To Be Filled Out by MoDOT *****

Comments:

Rte. N VE
ESS VE #4
ESS to be figuring a price on coldmilling a butt joint.

[signature] 6-30-09

Submitted By Resident Engineer — Date

Comments: 50/50 split

☑ **Approval Recommended**
☐ **Rejection Recommended**

Mark Shelton by [signature] 7-1-09

District Engineer — Date

Comments:

☑ **Approval**
☐ **Rejection**

[signature] 7-6-09

State Operations Engineer BAW — Date

Distribution: Resident Engineer, District Operations Engineer, State Operations Engineer
*Value Engineering Administrator - *MoDOT, P.O. Box 270, Jefferson City, MO 65102

Mr. Matt Malone, R.E.
Missouri Dept. of Transportation
105 Industrial Dr.
Park Hills, MO 63601

RE: Value Engineering Proposal 4 – Route N Tie-in
Rte. 67, Madison County,
Job No. J0P0928

This letter is written in proposition of a Value Engineering proposal to the construction requirements of Route N from 4+35 to 6+55. Emery Sapp & Sons proposes to wedge the newly aligned Route N into existing Route N from 4+35 to 6+55 using asphalt pavement. The proposal was designed in order provide an opportunity to complete the necessary tie-in between the new and existing Rte N with limited traffic disturbance and no road closures.

Under the original design requirements existing Route N would need to be saw cut and demolished from 4+35 to 6+55 in order for the new alignment to be constructed. This would require closure of Rte N for at least two weeks, causing traffic to take very lengthy detour by way of Rte C to obtain access to US 67. Rte N's new alignment would cross over the existing road way, requiring the old roadway be covered with fill in order for the new top of pavement grades to be obtained. Full depth pavement of 5 ¼" Bit Base and 1 ¾" BP-1 would be installed for the entire length 4+35 to 6+55.

Emery Sapp & Sons proposes to adjust the new Rte N vertical alignment from 4+35 to 6+55 in such a way that the new Rte N will meet up with the existing edge of pavement, preventing the old roadway from requiring removal. This will allow Rte N to remain open while the construction is under way. Flaggers will be used to monitor traffic and maintain safety as the tie-in is being constructed. Edge treatment will be placed along the existing edge of pavement to maintain motorist safety while construction temporarily inactive. Additional shoulder support pavement will be added at one foot wide by six inches deep with Bit Base (in addition to the full depth pavement leading up to it) along the south edge of the existing pavement from 4+35 to 6+55 adding stability to the joint between the new and existing pavement. Full depth 5 ¼" Bit Base will be laid at design width from the new main line pavement up to the edge of the existing pavement at 4+35, where it would taper from 22' – 0' along the edge of existing Rte N from 4+35 to 6+55. The full depth Bit Base will be placed in such a manner that it tapers in the new alignment smoothly with the existing pavement. Additional Bit Base will be used where needed to adjust cross slopes on the existing pavement and obtain a more fluent taper. Then 1 ¾" of BP-1 will be laid over the new Bit Base and existing pavement from the new main line to 6+55 forming a smooth tie-in. The BP-1 will be tapered from 1 ¾" to 0" as the 6+55 is approached. A butt joint may be added at 6+55 for additional cost if MoDOT believes it to be necessary.

By using the proposed wedging design over the original design several advantages are obtained. The wedging scenario will allow the new roadway to be constructed under live traffic. This will prevent road closure of Rte N, which as mentioned earlier would result in a lengthy detour. By wedging with asphalt less grading is required resulting in faster completion of the roadway. This will shorten the time frame in which motorist will be disrupted, thus increasing highway safety. Cost savings of $3,092.95 are

obtained by using the wedging scenario because less asphalt and Type 1 base are required to cover the same area. No disadvantages appear evident when using the wedging vs. completely realigning the roadway as by the original design.

In conclusion the value engineering proposal will increase safety for traveling motorist by shortening the time frame required to complete the tie-in. Though a cost savings of only $3,092.95 will be obtained from the value engineering proposal, this design can be completely constructed without closing Rte N at any point during construction. Emery Sapp & Sons believes there to be no other safer or more cost effective scenario than that proposed for complete the tie-in while still allowing the traveling public constant access and egress of the work zone.

60000	552382.6	855928	764.377	cl saw
60001	552391.6	855933.1	763.449	eop rt saw
60002	552373.4	855922.8	764.639	eop lt saw
60003	552380.3	855955.5	760.213	6+30 eop rt
60004	552365.6	855981.6	757.227	6+00 eop rt
60005	552353.7	856003.6	754.701	5+75 eop rt
60006	552341.7	856025.5	752.275	5+50 eop rt
60007	552329.6	856047.5	750.156	5+25 eop rt
60008	552317.4	856069.3	748.151	5+00 eop rt
60009	552305.4	856091.2	746.035	4+75 eop rt
60010	552293.2	856113.3	744.064	4+50 eop rt
60011	552286.1	856126.2	742.876	4+35 eop rt
60012	552303.9	856071	747.606	4+92 cl
60013	552307.8	856063.9	748.402	5+00 cl
60014	552319.9	856042.1	750.541	5+25 cl
60015	552332	856020.1	752.971	5+50 cl
60016	552344.1	855998.3	755.196	5+75 cl
60017	552356.2	855976.5	757.857	6+00 cl
60018	552370.6	855950.2	761.362	6+30 cl
60019	552383	855928.2	764.436	6+55.2 cl
60020	552361.2	855945	761.479	6+30 10.8lt
60021	552347.3	855971.6	757.921	6+00 10.0 lt
60022	552336.4	855994	755.232	5+75 8.7 lt
60023	552325.8	856016.8	752.798	5+50 7.1 lt
60024	552315.7	856039.7	750.52	5+25 4.9 lt
60025	552306.9	856063.5	748.255	5+00 1.1 lt

Cost Difference for Wedging Route N over Existing vs. Original Design

Orginal Design

Station	Type	Length (ft)	Width (ft)	Depth	Quantity	Unit Price	Cost
4+35-6+55	Type 1 Base	220	22	N/A	537.78 SY	$5.25	$2,823.33
	Optional Pavement	220	22		537.78 SY	$26.00	$13,982.22
						Total Cost =	$16,805.56

VE Proposal

Station	Type	Quantity	Unit	Unit Price	Cost
4+35-6+55	Type 1 Base	161.30	SY	$5.25	$846.83
	Bit Base	119.8	TN	$58.00	$6,948.40
	BP-1	43.90	TN	$65.00	$2,853.50
	Edge Treatment	210	LF	$5.00	$1,050.00
	Traffic Control-Flagging	44	HR	$45.77	$2,013.88
				Total Cost =	$13,712.61

Total Saving VE vs. Oringinal Contract = $3,092.95

VALUE ENGINEERING CHECK SHEET

TYPE OF WORK

(Check one that applies)

- ☐ Bridge/Structure/Footings
- ☐ Drainage Structures (RCP, RCB, CMP's, ect.)
- ☐ TCP/MOT
- X Paving (PCCP, ect.)
- ☐ Grading/MSE Walls
- ☐ Signal/Lighting/ITS
- ☐ Misc. _____

SUMMARY OF PROPOSAL

(If needed, condense summary to a couple of lines)

Contractor proposes to construct Route N tie-in with bituminous base and pavement while keeping roadway open to traffic. Original design would have closed road while constructing the tie-in. This is a 50/50 split.

SCANNING OF DOCUMENT

If the proposal is large, please mark or make note, which pages need to be scanned into the database. If there are special instructions, make note of them here.

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